

## RESPONSE ARGUMENTS

### DOUBLE PATENTING

*In view of the applicant's desire to have this case allowed as quickly as possible, he requests that, if allowed, this case has a terminal disclaimer to end at the same time as parallel case 08 / 477 704, now Patent 7 117 827, that is on the 10<sup>th</sup> October 2023.*

### OBVIOUSNESS - GENERAL ARGUMENTS

*The examiner has, in rejecting some claims, has maintained it is obvious under 35 USC 103 (a) to combine sometimes widely disparate features in separate prior art.*

*This case is parallel to case 08 / 477 704. Following a substantial amount of discussion, argument and review of all the prior art the examiner and the applicant agreed the claims that were subsequently allowed in the parallel case. In preparing the claims in the present case in the Supplemental Amendment of 25<sup>th</sup> May 2006, almost all the dependent claims of the allowed case were copied to the present case, with identical meaning and virtually identical text. In that amendment, all the previously recited prior art was listed, and it was shown that this prior art did not read on any of the main claims. In the present office action, the examiner has cited seven new references, of which three are referred to in the claim rejection arguments. The question of obviousness regarding the new references is addressed below.*

*The applicant would respectfully like to point out that he believes there can be no question of obviousness in the present case.*

*35 USC 103 (a) states in part:*

*" . . . .the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. . . . "*

*This very long disclosure of around 46 000 words and 280 diagrams relates to the art of the construction of long-life commercial un-cooled reciprocating IC engines, **an entirely new art**. No such engines presently exist and, to the applicant's knowledge, no party is attempting to produce any kind of commercial un-cooled engine. There is so far NOBODY skilled in that art, with possible exception, in a very modest way, of the applicant. As can be seen from the comprehensive disclosure, the configurations, layout, construction and materials necessary to build viable un-cooled engines are entirely different from those used to build today's conventional cooled IC engines, which are a very distinctly different and are a separate art.*

*The parent CIP 05 / 473 797 of 28<sup>th</sup> May 1974 clearly describes un-cooled commercial engines, including ceramic components, capable of continuous operation for indefinite periods. (See the disclosure relating to Figs 132 through 143, of which that relating to the Figures now renumbered as Figs. 1 through 12 is retained in the present case.) At that time, as far as the*

applicant is aware, there was absolutely no talk of completely un-cooled engines.

In the 80's and 90's a few engineers worked on "adiabatic" or "un-cooled" engines (mostly engines of substantially reduced cooling, not no cooling). However, this work - as demonstrated by Roy Kamo and others - Involved taking a standard engine and making a few material changes, without changing engine configuration in any way. For example, ceramic cylinder liners were fitted in a metal block, ceramic caps were placed on metal pistons, zirconia poppet valves replaced metal valves of identical shape. Predictably, results were not encouraging, and work on adiabatic engines was abandoned.

The applicant believes the only way to build commercial un-cooled engines is to start with a clean sheet of paper and re-configure everything around the new parameters (no cooling, ceramic materials, utterly different manufacturing and assembly methods), and this long disclosure is the fruit of the "clean sheet of paper" approach, showing a completely new ways of building a completely new product. For example, the CIP of 07 / 237 761 discloses features such as the integral housing with thermal insulation, the piston for passage of engine gases, the piston having combined motion and functioning as output shaft, which the applicant has never seen in any product or publication of the last forty years. The applicant is convinced that this patent application describes a new art. In summary, when the various individual inventive steps were made, in July 71, in May 1974 and August 1988, nothing of them was obvious to anyone of ordinary skill in the different art of building conventional cooled engines, let alone the new art of building completely un-cooled engines..

The applicant would like to note for the record that, in disclosing of the features of the issued patent, prior to and subsequent to its publication in October 2006, to knowledgeable persons in the art of conventional cooled IC engines construction, absolutely everything about the basic concepts of the published patent has struck these persons as entirely novel and non-obvious. The published patent has the same disclosure as the present case. (A summary of the concepts presented and a list of recipients is available.)

#### Comments on newly cited art: Iver (3 534 828):

The majority of rejections under 103 have been in view of Iver. MPEP 2143 Basic Requirements of a Prima Facie Case of Obviousness states:

"To establish a prima facie case of obviousness, three base criteria must be met. First there must be some suggestion of motivation, either in the references themselves or to the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all of the claim limitations."

#### First item, Motivation:

Iver has absolutely no motivation to build un-cooled engines. Iver recites only "cladding for sound attenuation purpose around machines, such as engines, gearboxes or compressors". He is only interested in providing sound attenuation for already built machines, fully operational without Iver. The applicant was not able to find a single reference to thermal issues in Iver's disclosure.

Claim 221 recites a housing including thermal insulation. In the office action, the examiner refers to "the housing of Iver et al" (see page 4, etc). The applicant was not able to find any reference to a "housing" in Iver; instead Iver refers to a "cladding". A cladding is entirely different from a housing. The Iver Figures clearly show a cladding, as distinct from a housing. The Oxford American Dictionary of Current English (publication 1999) makes this distinction:

"Cladding: a covering or coating on a structure or material, etc."

"Housing: 3 a rigid casing, esp. for moving or sensitive parts of a machine."

As the examiner has rightly pointed out, every substance to some degree or other can effect thermal insulation. In the view of the applicant, it is unreasonable to cite a new feature (cladding or wrapping is not disclosed in the present case) from an entirely separate art (sound attenuation as opposed to un-cooled engine construction) under 103, just because all substances share the characteristic of effecting some degree of thermal insulation. In the office action, the examiner frequently alleges that "it would have been obvious to one of ordinary skill in the art to place the housing (the applicant's emphasis: Iver discloses a cladding, not a housing) of Iver et al around the engine of (prior art) to reduce noise."

It is respectfully submitted that it would not be obvious to some skilled in the NEW art of building un-cooled engines, since there is no reference in the disclosure or claims to the objective of reducing noise.

Earlier, in both this case and in parallel case 08 / 477 704, the examiner had cited Nallinger (3 112 810) and, following discussion, claims were amended to read over Nallinger. They were allowed and now do so. In the view of the applicant, if the claims read over Nallinger, they therefore also read over Iver. Nallinger, like Iver, discloses an enclosure for acoustic attenuation purpose fitted about an already manufactured and independently functioning product, such as an engine. In the claims under review, the housing is an integral part of a device or an engine clearly described by many distinguishing features, in contrast to Iver's and Nallinger's general reference to just an engine or machine.

Iver's (and Nallinger's) disclosure is of a wrapping or cladding for sound attenuation purpose is very different from the integral thermally insulating housing, such as is disclosed in Figs. 21, 23 - 25, 129 - 132, 136 - 140, and as defined by the dictionary. Their disclosures show zero motivation to drastically restrict heat flow from a cylinder or cylinder head.

Second item, Expectation of Success:

The limits of proper functionality for all machines, including engines, are designed for the maximum load and highest ambient temperature to be encountered in their application. In engines, the loss of heat by radiation from the engine block, oil sump cover, and cylinder head is always calculated in to determine proper functionality under the most highly stressed conditions. The loss of ambient air circulation that fitment of Iver's device to an already designed and manufactured engine would entail, would effectively guarantee engine failure during operating under the highly stressed conditions the un-clad engine was designed for. The "plastic foam" materials advocated by Iver generally have low melting temperatures and low flashpoint temperatures. Under highly stressed conditions, the exterior surface of an engine block not exposed to ambient air flow could reach several hundred degrees, enough to melt or otherwise degrade Iver's material, or to initiate a fire. The applicant avers that Iver's cladding has a low to zero expectation of successful implementation.

*Third item, Teach or Suggest All Claim Limitations:*

*It is fairly obvious that Iver does not teach any of the claim limitations, since he doesn't describe an engine in any way. The applicant avers that Iver does not suggest them either, since Iver says nothing about restricting heat flow, any kind of engine construction, etc.*

*Comments on newly cited art: JP63-235648:*

*JP648 shows a ceramic cap on a metal piston, a feature nowhere disclosed or claimed in the present case, which shows no caps of any kind on pistons. The present main claims relate to a complete functioning device or engine, distinguished by many unique features, none of which are recited by JP648. It is respectfully submitted that JP 648 cannot be cited under 103, because in the present case there is no mention of or claim for what JP 648 discloses: a separate cap mounted to a piston*

*It seems that JP 648 does not add new art. Ceramic caps on pistons were previously reviewed in this case and also in allowed application 08 / 477 704, including under Kraft (4 404 935), Hauser (4 433 616), Heinz et al (4 466 399), Taylor (4 736 676), all referred to in the Supplemental Amendment of 25<sup>th</sup> May 06, which showed that the prior art did infringe on the main claims. In the parallel case, following review by the applicant and discussion with the examiner, claims in the parallel case were amended to read over this prior art, and the case was subsequently allowed. It is respectfully submitted that JP 648 does not disclose features distinct from those already reviewed. In the view of the applicant, if the claims read over the prior art cited above, they therefore also read over JP 648.*

*Motivation: JP 648 seeks to limit heat flow from the combustion volume to the piston. In the present case, the motive is substantially different; to severely limit heat flow from the entire engine.*

*Success: In the eighties, many people tried putting ceramic caps on pistons, without success. Problems were chiefly due to the substantially different co-efficients of thermal expansion for metals and ceramics. As far as the applicant is aware, there is today no commercially available engine having a piston similar to that of JP 648.*

*Teaching or Suggestion of all Claim Limitations:*

*In the opinion of the applicant, JP 648 does not teach or suggest any of the claim limitations.*

*Comments on newly cited art: DE 3607 421 A1:*

*DE 421 shows toroidal combustion chambers with the piston having a passage for charge air to the chambers. (Figs 3, 4 and 5 describe a transmission which can be used with engine of Figs. 1 and 2.)*

*Earlier, in at least the parallel case 08 / 477 704, other art was found showing toroidal combustion chambers with the piston having a passage for charge air to the chambers, including Gould 1 276 346; MacKenzie 1 777 007; MacKirdy 1 801 633; Isle 1 902 781; Brown 2 918 045, 3 340 855 and 3 955 543; and Sabol 2 957 305. The supplemental Amendment of 25<sup>th</sup> May*

2006 shows that this prior art is not pertinent to and does not read on any of the main claims, and therefore not on the dependent claims either. Following review by the applicant and discussion with the examiner, claims in the parallel case were amended to read over this prior art. They were allowed and now do so. The present case has different main claims, dependent claims largely identical to those in the allowed case, and some combinations of main and dependent claims are similar to those in the allowed case. In the view of the applicant, if the present claims read over the prior art cited above, they therefore also read over DE 421. See further arguments under main claims 221 and 277 below.

Motivation: DE 421 shows no motivation to restrict heat flow in any way.

Success: There is a modest expectation of success for the engine of DE 421.

Teaching or Suggestion of all Claim Limitations: DE 421 does not show any housing surrounding the cylinder assembly, nor any thermal insulation (Claim 221). DE 421 does not show any structure outside the cylinder assembly, nor any thermal insulation (Claim 277)

The examiner is respectfully requested to consider the above general background and also the arguments disputing the appropriateness of using the three citations to reject under 103, when reviewing the arguments on the individual claim rejections, listed below.

## **SPECIFIC ARGUMENTS ON REJECTIONS**

Claim 221 is rejected for possible double patenting and obviousness in view of Iver. It is respectfully submitted that the issue of double patenting is here moot. Published claim 1 in prior application 08 / 477 704, with or without claim 22, recites combined motion; present claim 221 makes no reference to combined motion.

Main claim 221 has been amended to more clearly distinguish the housing over the cladding of Iver. That cladding is something optionally fitted to a machine after it is already manufactured and functional, and the cladding does not support an internal part of the machine, nor is the cladding an integral part of the machine.

Please note the arguments above under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that Iver cannot be cited for obviousness under 103 in the present case.

It is respectfully submitted that the rejection is hereby traversed and main claim 221 and its dependent claims be allowed.

Claims 207, 219, 230, 240, 256, 270, 285, 307, and 321 - 343 are rejected as being indefinite. In arriving at this phrasing, the applicant was seeking to make a modest improvement over the phrasing agreed in the prior application 08 / 477 704, now issued, in claims 48, 62, main claim 81, 120 and 148. The claim makes sense to the applicant, but he is happy to amend to a

clearer phrasing, or to revert to the phrasing used in the parallel issued case.

Claims 207, 230, 256, 285 and 307 are amended to now be definite and, in the case of claim 285, to more properly read on its main claim. Because they are amended and definite and read on amended and now allowable main claims, they are allowable, and their dependent claims 219, 240 and 270 are now also allowable.

Main claim 321 is amended to now be definite. Because it is amended and definite it is allowable. Therefore dependent claims 322 through 343 are now also allowable.

The Supplemental Amendment of 25<sup>th</sup> May 2006 cites Brown and Berger and shows, together with arguments made elsewhere in this response, that they do not read on any of the main claims, and therefore do not read on any of the dependent claims. Earlier, Brown and Berger were cited in connection with similar dependent claims in the parallel case 08 / 477 704 and, following review and discussion, the claim wordings finally agreed were considered to read over the prior art, and the case was allowed.

It is respectfully submitted that this rejection is hereby traversed and claims 207, 219, 230, 240, 256, 270, 285, 307, and 321 - 343 be allowed.

Claims 198, 199, 202, 203, 206, 208, 216, 217 are rejected because of obviousness under 35 USC 103(a), in view of Gould plus Iver. In the supplemental amendment of 25<sup>th</sup> May 2006, the applicant shows that Gould does not read on main claim 198, and therefore not on its dependent claims either. Gould does not show a housing enclosing a cylinder, nor insulating material of any kind.

Main claim 198 is amended to more clearly distinguish the thermally insulating housing over the combination of Gould and the cladding of Iver. That cladding is something optionally fitted to a machine after it is already manufactured and functional, and the cladding does not support an internal part of the machine, nor is the cladding an integral part of the machine.

It is not obvious to anyone having ordinary skill in the art of building cooled engines to apply the sound attenuation device of Iver to an already-manufactured Gould engine to help silence it, because it would wreck the engine or possibly cause the cladding to melt or ignite under high load or ambient temperature. (See Obviousness - General Arguments, above.) However the engine of claim 198 is not the Gould engine: it is substantially different as defined in the claims and noted above. (See Item Three: Teaching or Suggestion of all Claim Limitations.) The present application does not describe or claim sound attenuation devices.

Please note the arguments above under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that Iver cannot be cited for obviousness under 103 in the present case.

In regard to claim 206, the phrasing "relatively small manufactured depression" is used, as distinct from "manufactured depression" in the parallel allowed case. The applicant has a recollection of the issue of manufacturing defects being discussed with the examiner in that case, but it was then thought that an inadvertent defect would not affect a claim describing a manufactured product. The applicant is happy to modify by adding "deliberately", and to similarly modify claims 229, 284, and 329.

It is respectfully submitted that this rejection is hereby traversed and claims 198, 199, 202, 203, 206, 208, 216, 217 be allowed.

Claims 198, 200, 209, 210, 220, 277, 278, 279, 281, 284, 286, 288, 289, 290, 293, 296, are rejected as unpatentable over Boyd plus Iver. In the supplemental amendment of 25<sup>th</sup> May 2006, the applicant shows that Boyd does not read on main claims 198 and 277, and therefore not on their dependent claims either.

Main claim 198 is amended to more clearly distinguish the thermally insulating housing over the combination of Boyd and the cladding of Iver. Boyd does not show a housing surrounding a cylinder assembly, nor insulating material of any kind. That cladding is something optionally fitted to a machine after it is already manufactured and functional, and the cladding does not support an internal part of the machine, nor is the cladding an integral part of the machine.

Main claim 277 is amended to more clearly distinguish the thermally insulating structure over Boyd in combination with the cladding of Iver. Boyd does not show an integral structure partly surrounding a cylinder, nor insulating material of any kind. The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding is not an integral part of the machine.

It is not obvious to anyone having ordinary skill in the art of building cooled engines to apply the sound attenuation device of Iver to an already-manufactured Gould engine to help silence it, because it would wreck the engine or possibly cause the cladding to melt or ignite under high load or ambient temperature. (See Obviousness - General Arguments, above.) However the engine of claim 198 is not the Gould engine: it is substantially different as defined in the claims and noted above. (See Item Three: Teaching or Suggestion of all Claim Limitations.) The present application does not describe or claim sound attenuation devices.

Please note the arguments above under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that Iver cannot be cited for obviousness under 103 in the present case.

Claim 220 is modified to add "during operation of said device", with claims 241, 296 and 343 similarly modified. Regarding claim 281, the dependent claim refers to "fasteners loaded in tension" and is dependent on an allowable main claim, as shown above and in the Supplemental Amendment of 25<sup>th</sup> May 2006.

It is respectfully submitted that this rejection is hereby traversed and claims 198, 200, 209, 210, 220, 277, 278, 279, 281, 284, 286, 288, 289, 290, 293, 296 be allowed.

Claims 280, 292 are rejected as being unpatentable over Boyd in view of Iver as applied to claim 277, and in view of Goldsborough. (Is the examiner referring to Goldsborough 1 755 578 or Goldsborough 1 812 870 ?) In the supplemental amendment of 25<sup>th</sup> May 2006, the applicant shows that neither Boyd nor either of the two Goldsborough references reads on main claim 277, and therefore not on its dependent claims either. Goldsborough shows a ceramic lining to the interior of a cylinder in an engine. The probability of Success for the Goldsborough engines is just about zero. (See comments on differential expansion in the General Arguments above, under JP'648.) with having none of the defining features of main claim 277. Boyd does

not show a cylinder within a structure, nor insulating material of any kind.

Main claim 277 is amended to more clearly distinguish the structure over Boyd in combination with the cladding of Iver, in view of Goldsborough. Neither Boyd nor Goldsborough show an integral structure partly surrounding a cylinder, nor insulating material of any kind. Goldsborough does not show a piston having an internal passage for fluids. The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding is not an integral part of the machine.

Please note the arguments above and also under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that Iver cannot be cited for obviousness under 103 in the present case.

Claim 292 is dependent on claim 280, and the combination describes an electrical circuit in a ceramic piston or cylinder. It is respectfully submitted that a spark plug is something different from either a piston or a cylinder. It is an optional insert (diesels don't have spark plugs), usually into a cylinder head. The Supplemental Amendment of 25<sup>th</sup> May 2006 and the arguments above show main claim 277 (on which 280 depends) to be allowable, in which case claims 280 and 292 are also allowable as they stand. The present claims were copied from those in parallel case 08 / 477 703, which have since been allowed. (See allowed claims 15 and 17, depending on claims 14 and 16 respectively.)

It is respectfully submitted that this rejection is hereby traversed and claims 280 and 292 be allowed. They depend on allowable main claim 277.

Claims 282, 294 are rejected as being unpatentable over Boyd in view of Iver as applied to claim 277, and in view of JP'648. The probability of successfully implementing JP'648 is small (see comment above).

Main claim 277 is amended to more clearly distinguish the structure over Boyd in combination with the cladding of Iver. Boyd does not show an integral structure partly surrounding a cylinder, nor insulating material of any kind. The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding is not an integral part of the machine. JP 648 shows a ceramic cap on a metal piston, nowhere mentioned or claimed in this application, and has none of the distinguishing features of claim 277.

Please note the arguments above under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that neither Iver nor JP'648 can be cited for obviousness under 103 in the present case.

Fasteners are known, but claim 282 is dependent on allowable claim 277, as is claim 294, which recites a perhaps novel fastener of tubular form nowhere found in the cited art.

It is respectfully submitted that this rejection is hereby traversed and claims 282 and 294 be allowed. They depend on allowable main claim 277.



Claim 201 Is rejected as being unpatentable over Gould in view of Iver as applied to claim 198, and further in view of JP'648. The probability of successfully implementing JP'648 is small (see comment above). In the Supplemental Amendment of 25<sup>th</sup> May 2006, the applicant shows that Gould does not read on main claim 198, and therefore not on dependent claim 201 either. Gould does not show a housing enclosing a cylinder, nor insulating material of any kind.

Main claim 198 is amended to more clearly distinguish the thermally insulating housing over the combination of Gould and the cladding of Iver, in view of JP'648. The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding does not support an internal part of the machine, nor is the cladding an integral part of the machine. JP'648 restricts heat flow through a piston, in contrast to main claim 198 which restricts heat flow from the entire engine. JP'648 does teach or suggest any of the features of claim 198.

Please note the arguments above under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that neither Iver nor JP'648 can be cited for obviousness under 103 in the present case.

It is respectfully submitted that this rejection is hereby traversed and claim 201 be allowed. It depends on allowable main claim 198.

Claims 198, 204, 205 are rejected as being unpatentable over Arney in view of Iver. In the supplemental amendment of 25<sup>th</sup> May 2006, the applicant shows that Arney does not read on main claim 198, and therefore not on its dependent claims either. Arney does not show a housing enclosing a cylinder, nor insulating material of any kind. On the contrary, Arney shows cooling fins.

Main claim 198 is amended to more clearly distinguish the the thermally insulating housing over the cladding of Iver. That cladding is something optionally fitted to a machine after it is already manufactured and functional, and the cladding does not support a component of the machine, nor is the cladding an integral part of the machine.

Please note the arguments above and under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that Iver cannot be cited for obviousness under 103 in the present case.

It is respectfully submitted that this rejection is hereby traversed and main claim 198 together with dependents claims 204 and 205 be allowed.

Claims 201, 215 are rejected as being unpatentable over Gould in view of Iver, and further in view of Goldsborough. In the supplemental amendment of 25<sup>th</sup> May 2006, the applicant shows that Gould does not read on main claim 198, and therefore not on dependent claims 201 and 215 either. Gould does not show a housing enclosing a cylinder, nor insulating material of any kind. Both Goldsborough disclosures recite a refractory (ceramic) lining on the inside of a cylinder. This is partly covered by claim 201, but NOT by the main claim on which it depends, which recites features not disclosed by Goldsborough, including toroidal combustion

chambers, piston projections reciprocating in cylinder depressions, all encased in a housing including thermal insulation material.

Main claim 198 is amended to more clearly distinguish the thermally insulating housing over the cladding of Iver. That cladding is something optionally fitted to a machine after it is already manufactured and functional, and the cladding does not support a component of the machine, nor is the cladding an integral part of the machine.

Please note the arguments above and under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that Iver cannot be cited for obviousness under 103 in the present case.

Claim 215 recites electrical circuits in ceramic material, nowhere disclosed in Gould or Goldsborough. Claim 215 is dependent on claim 201, and the combination describes an electrical circuit in a ceramic piston or cylinder. It is respectfully submitted that a spark plug is something different from either a piston or a cylinder. It is an optional insert (diesels don't have spark plugs), usually into a cylinder head. The Supplemental Amendment of 25<sup>th</sup> May 2006 and the arguments above show main claim 198 to be allowable, in which case claims 201 and 215 are also allowable as they stand.

It is respectfully submitted that this rejection is hereby traversed and claims 201 and 215 be allowed. They depend on allowable main claim 198.

Claims 221, 226, 229, 231, 237, 277, 278 are rejected as being unpatentable over DE3607421A in view of Iver. AS noted above, DE'421 is similar to other citations, which the Supplemental Amendment of 25<sup>th</sup> May 2006 shows do not read on main claims 221 nor 277

Main claim 198 is amended to more clearly distinguish the thermally insulating housing over DE'421 in combination with the cladding of Iver. DE 421 does not show a housing enclosing a cylinder, nor insulating material of any kind. The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding is not an integral part of the machine, nor does it support a component of the machine.

Main claim 277 is amended to more clearly distinguish the thermally insulating structure over DE 421 in combination with the cladding of Iver. DE'421 does not show an integral structure partly surrounding a cylinder assembly, nor insulating material of any kind. (DE'421 shows a sleeve inside a cylinder assembly.) The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding is not an integral part of the machine.

Please note the arguments above and under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that neither Iver nor DE 421 can be cited for obviousness under 103 in the present case.

Claim 229 is amended. Please note the comments about manufactured depressions in reference to claim 206 above.

It is respectfully submitted that this rejection is hereby traversed and claims 221, 226, 229, 231,

237, 277, 278 be allowed.

Claims 224, 225, 235 are rejected as being unpatentable over DE3607421A in view of Goldsborough. Claims 224, 225 and 235 are dependent on main claim 221.

Main claim 221 is amended to more clearly define the thermally insulating housing as an integral part of the device, and which contains within it other components of the device. Goldsborough does not show a thermally insulating housing enclosing a cylinder, nor a piston with an internal passage. As noted above DE'421 has the same features of earlier citations, already traversed. (DE'421 shows a sleeve inside a cylinder assembly.) DE'421 does not show a housing enclosing a cylinder, nor insulating material of any kind.

Claim 235 recites electrical circuits in ceramic material, nowhere disclosed in DE'421 or Goldsborough. Claim 235 is dependent on claim 224, and the combination describes an electrical circuit in a ceramic piston or cylinder. It is respectfully submitted that a spark plug is something different from either a piston or a cylinder. It is an optional insert (diesels don't have spark plugs), usually into a cylinder head. The Supplemental Amendment of 25<sup>th</sup> May 2006 the amendments to it, and the arguments above all show main claim 221 to be allowable, in which case claims 224 and 235 are also allowable as they stand.

Please note the arguments above and under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that DE 421 cannot be cited for obviousness under 103 in the present case.

It is respectfully submitted that this rejection is hereby traversed and claims 224, 225 and 235 be allowed. They depend on allowable main claim 221.

Claims 227, 238 are rejected as being unpatentable over DE3607421A in view of Iver, and further over JP 648. Claims 227 and 238 are dependent on main claim 221. The Supplemental Amendment of 25<sup>th</sup> May and the arguments above show that DE'421 does not read on main claim 221, and therefor cannot read on any dependent claims. Please note that, in contrast to DE'421 and JP'648, the disclosure and claims in the present case relate to a thermally insulating housing surrounding a cylinder assembly and other components.

Main claim 221 is amended to more clearly define the thermally insulating housing as an integral part of the device, and which contains within it other components of the device. JP 648 does not show a thermally insulating housing enclosing a cylinder, nor insulating material of any kind, or any of the other distinguishing features of claim 221. DE 421 does not show a housing enclosing a cylinder, nor insulating material of any kind. (DE'421 shows a sleeve inside a cylinder assembly.) The cladding of Iver is something optionally fitted to a machine after it is already manufactured and functional, and the cladding is not an integral part of the machine, nor does it support a component of the machine.

Please note the arguments above and under the heading OBVIOUSNESS - GENERAL ARGUMENTS including those that neither Iver, nor JP648, nor DE421 can be cited for obviousness under 103 in the present case.

*It is respectfully submitted that this rejection is hereby traversed and claims 227 and 238 be allowed. They depend on allowable main claim 221.*

## **OTHER MATTERS**

*The applicant respectfully requests the allowance of claim 270, perhaps listed as rejected due to typographical error. It reads on an allowed main claim, and no argument for rejection was observed in the office action.*

*The applicant respectfully requests the allowance of main claim 297, perhaps inadvertently listed with a lot of dependent claims as objected to because of dependence on a rejected main claim. Claim 297 is a main claim, and no specific argument for rejection or objection to it was noted in the office action. The supplemental Amendment of 25<sup>th</sup> May 2006 shows it to be allowable.*

*The applicant respectfully requests the re-instatement of multiple dependent claims 344 through 348, which were withdrawn by the examiner because they were not correctly phrased. The claims are here amended to proper format. In claim 345, the applicant has deleted a feature which is not directly relevant to the claim. (It was originally intended as a basis for a dependent claim, since omitted.) It is respectfully submitted that these claims are allowable, because the claims on which they depend are allowable.*

*The applicant respectfully requests permission to enter new main claim 349, and claims 350 to 357 dependent on it. As the examiner may know, the applicant was for long advised by his patent attorney Richard Harris that it was not possible to claim an un-cooled engine. Perusal of the prior art has led the applicant to the conclusion that, in his patent application of 1974 (of which the present case is a continuation), he may have been the first to disclose a completely un-cooled engine capable of continuous operation for an indefinite period.*

**END OF RESPONSE**